Building an Integrated Biodefense Network: BRC and RCE Collaboration Opportunities

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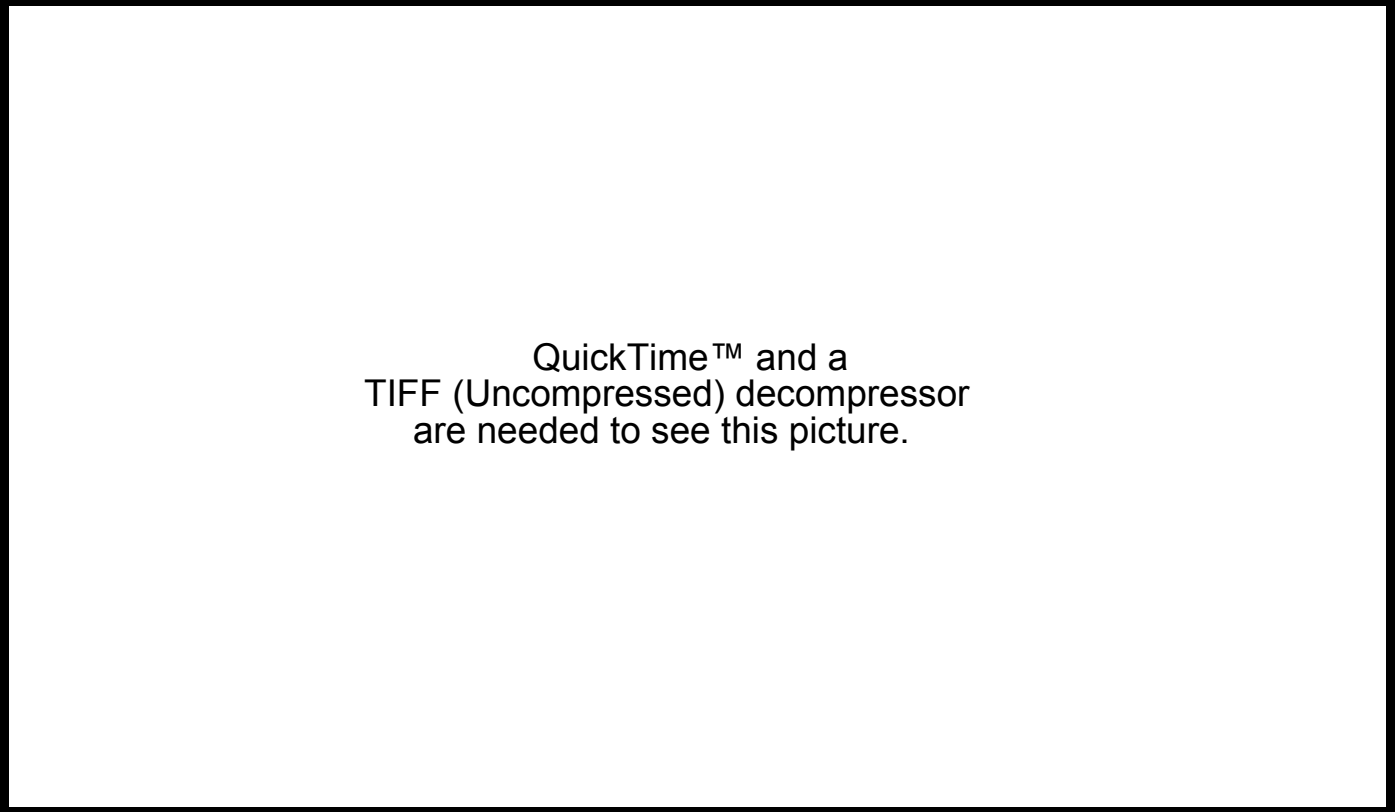
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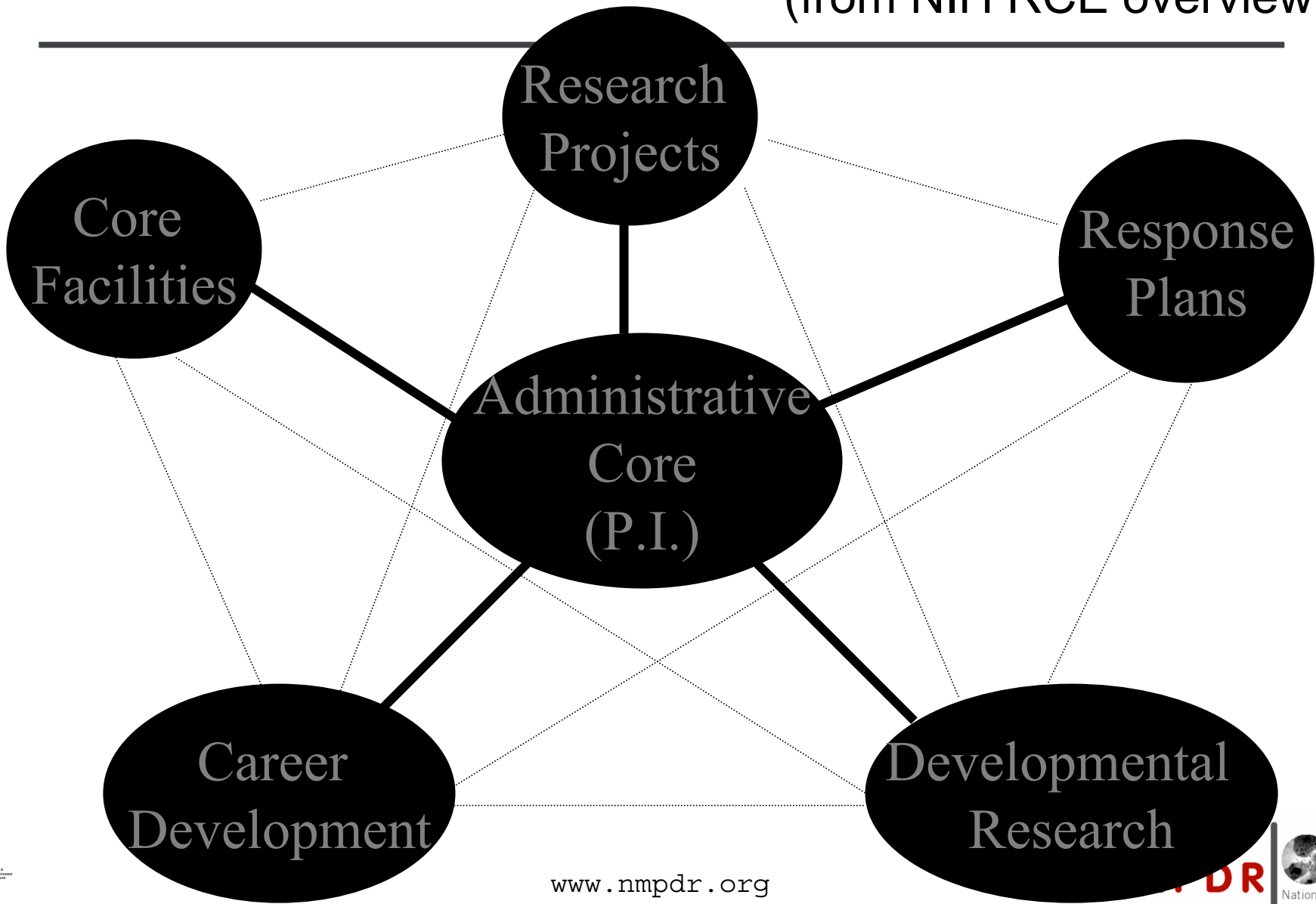
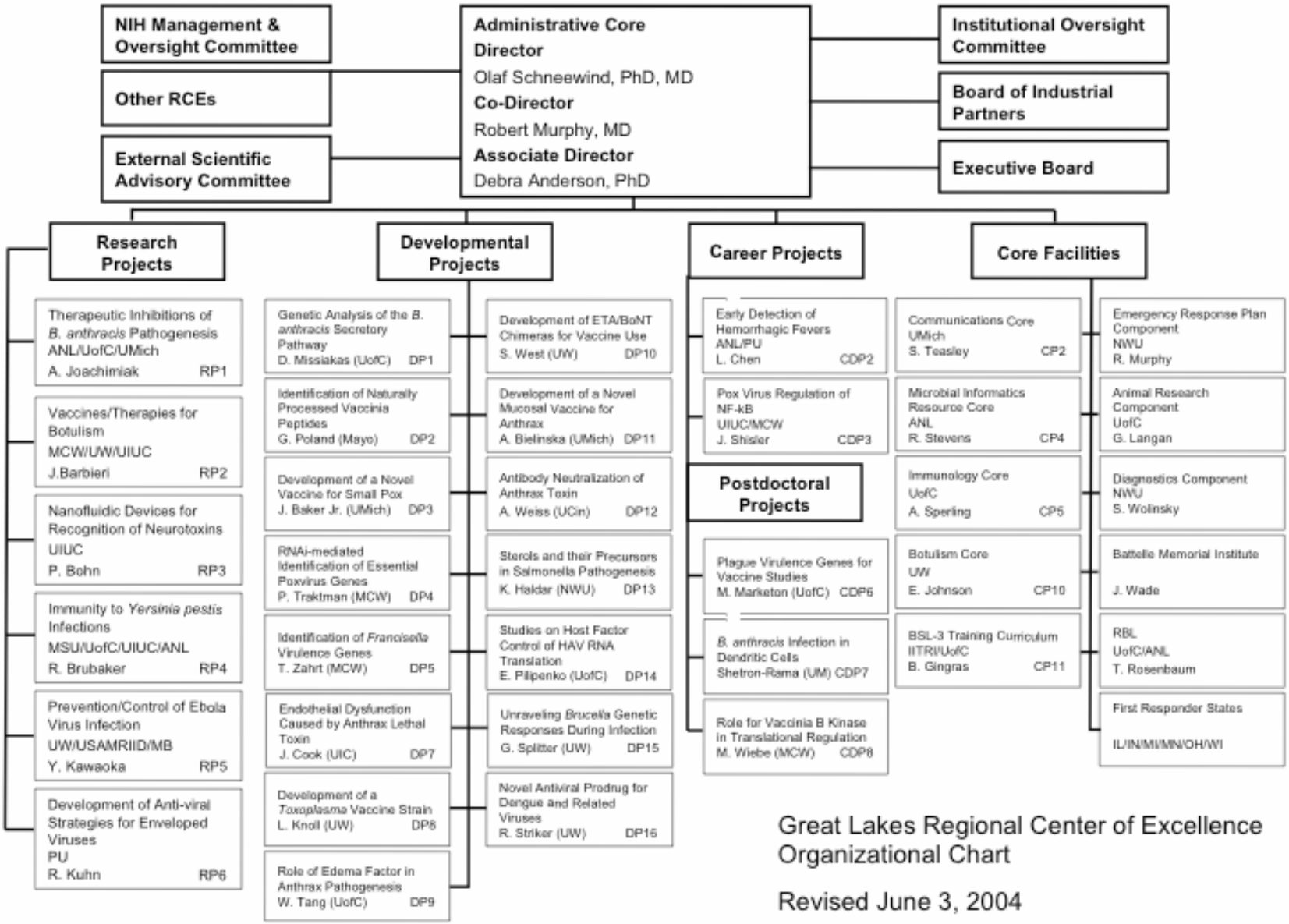
Center Relationships

(from NIH RCE overview)





Great Lakes Regional Center of Excellence
Organizational Chart

Revised June 3, 2004

Observations

- RCEs are relatively large centers
  - Up to about $10M year per Center
  - Dozens of investigators in each over a geographic area
  - Really collections of individual projects and cores
  - Critical mass by assembling regional investigators
  - Therapeutics and basic science oriented
- Informatics is a small part of their activities
  - Some RCEs do not have an informatics core
  - Many of the individual labs in the RCES do not have adequate bioinformatics support

Challenges of Coupling to RCEs

- There is a need to identify those projects in the RCEs that overlap with the assigned organisms in the BRCs
  - NIH can probably help here in collecting up to date information
  - Typical RCE like GLRCE will touch several BRCs
- The culture and informatics "competence" varies considerably across projects with the RCE
  - Some groups are interested in leveraging informatics but have only fractional effort to contribute to interaction

Challenges of Coupling to RCEs

- The RCE labs have need for several types of support
  - Bioinformatics in support of their research in the small (daily, weekly help)
  - Strategic input to planning and priority setting
  - Technology transfer to enable them to be more effective at doing what they do
- The BRC x RCE interface is human intensive
  - Need for packaging BRC capabilities
  - Need for targeted interactions
  - Need for tutorials and training
  - Need for systematic coordination

Packaging BRC Capabilities

- Writing the cookbooks
  - RCEs (or more specifically the post-docs in the project labs of the RCEs) need access to well described "protocols" for common bioinformatics tasks
  - Think FAQ with interactive step by step help to get from the question to the results via the tools
- Training (often in situ training) is often the rate limiting step
  - Not all labs appreciate what bioinformatics can do
  - Sometimes the post-docs or younger scientists are simply overwhelmed

Some Things We Could Try

- Unified Directory of Who is Doing What
  - Organized by Organism, Tools, Databases, Methods, FAQ and “protocol”
- Registry <sub, pub> model
  - We register what we can do
  - They register what they need
  - We can have humans in the loop to help broker
- Problem/Solution Marketplace
  - It is easy for labs to import successful methods/techniques
  - Need to create a forum (ebay) like space for exchange of requirements and capabilities

Our Own Experience

- The labs that "get it" are asking for more
  - "tell us what to do"
  - Target selection, experiments to test predictions etc
  - They also realize the limited resources and are less interested in sharing if that means getting less support
- Training is a major bottleneck
  - Students in the centers need more bioinformatics training
  - They know it and want to learn
- If NIH requires it they will do it
- Collaboration with BRCs while good may be viewed as a mandate rather than an opportunity

RCE Emergency Response Plans

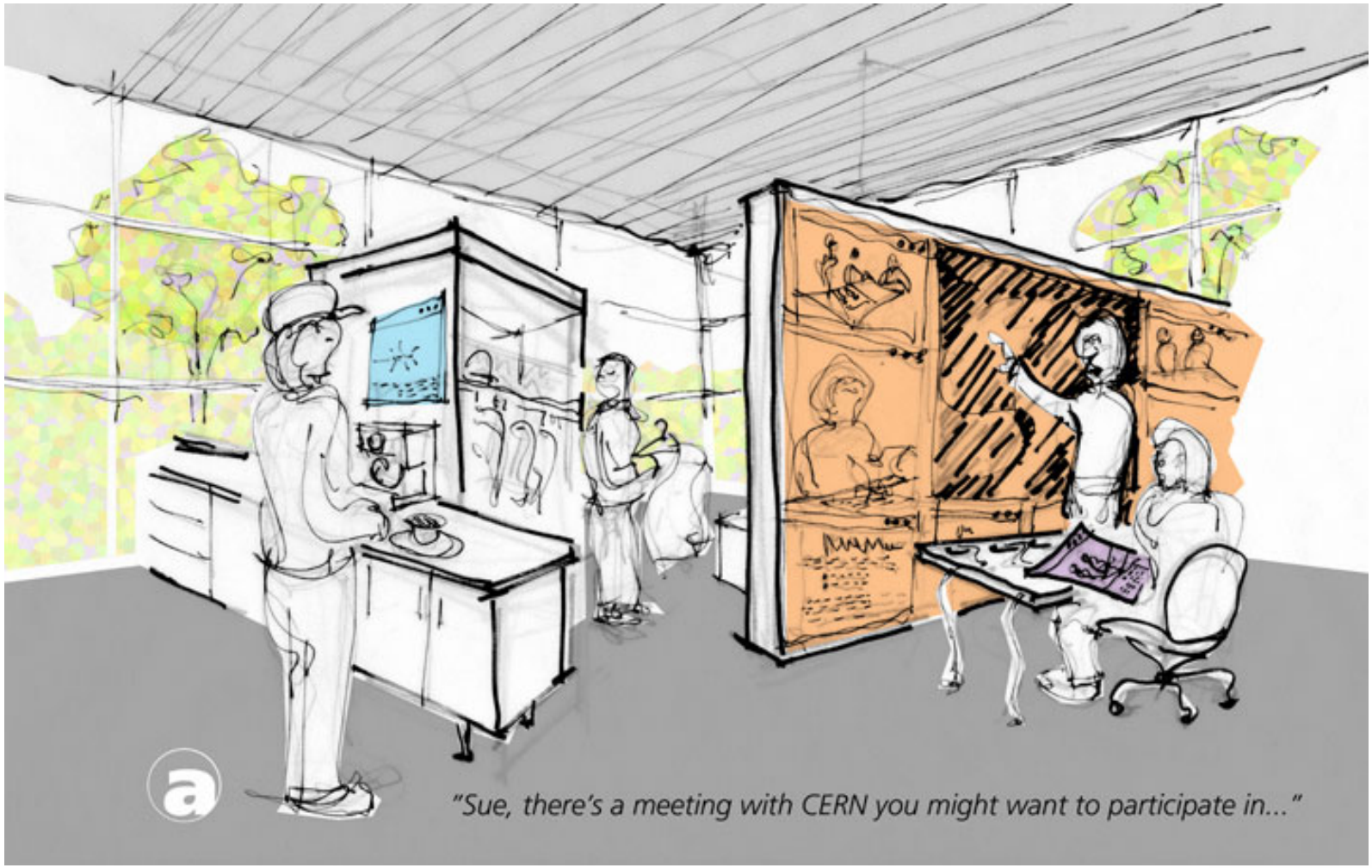
- Provide scientific support for first responders, within the context of NIH's research mission; add not duplicate
- Develop linkages to federal agencies, state and local agencies
- Have plans in place to respond
- Make facilities and staff available

(from NIH overview of the RCEs)

Putting the Networking in the Biodefense Network

- I believe the BRCs need to be part of the nations integrated biodefense capability
- This means making the connections to the RCEs prior to the need to respond
- There should be some cross BRC x RCE interactions at annual meetings, etc.
- Some kind of coordination group is probably needed

Supporting Ad Hoc Collaboration



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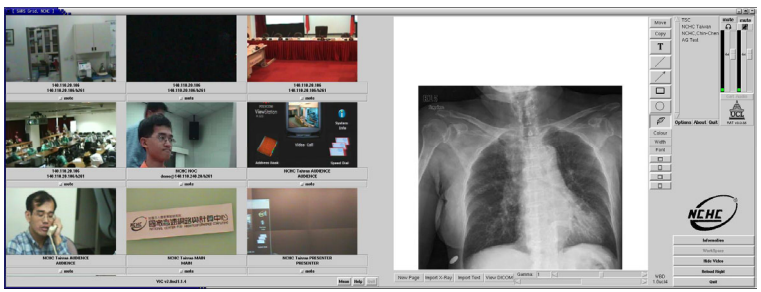
Access Grid and Collaboration Technologies

Access Grid ⇒ Integrating Group to Group Collaboration and Visualization

ACCESS GRID

Taiwan's NCHC's SARS Combat Task Force sarsgrid.nchc.org.tw



- System consists of Access Grid, H.323 VTC, medical information management, emergency dispatch and network monitoring.
- Access Grid nodes installed:
  - Sanchung Hospital
  - Chang Gung Memorial Hospital (CGMH)
  - Taiwan's Center of Disease Control
  - Taipei Municipal Jen-Ai Hospital
  - Operational in 10 medical centers on the island

Summary of Opportunities

1. FAQs and Directories
2. Set of off the shelf “informatics” protocols
3. Registry of needs and capabilities
4. BRC Training network
5. Standing interactions to facilitate rapid response